

ABSTRACT

The method of the present invention utilizes high pressure, near-supercritical CO₂ within a pressure vessel to process filamentary nanocarbon to debulk, disperse, purify, surface treat, pre-impregnate, and micronize the carbon nanofibers. In accordance with the invention, near-supercritical CO₂ is utilized within a pressure vessel to effect the desired process upon filamentary nanocarbon. For example, a quantity of filamentary nanocarbon can be effectively debulked, de-agglomerated and disentangled by agitating the mixture within the pressure vessel. When the CO₂ is released from the pressure vessel, the filamentary nanocarbon exhibits a dramatic reduction in volume. Other nanofiber processes can be performed such as surface treating and pre-impregnation by introduction of the desirable species into the near-supercritical CO₂ prior to processing. Purification processing can additionally be performed by introducing a co-solvent into the near-supercritical CO₂.